

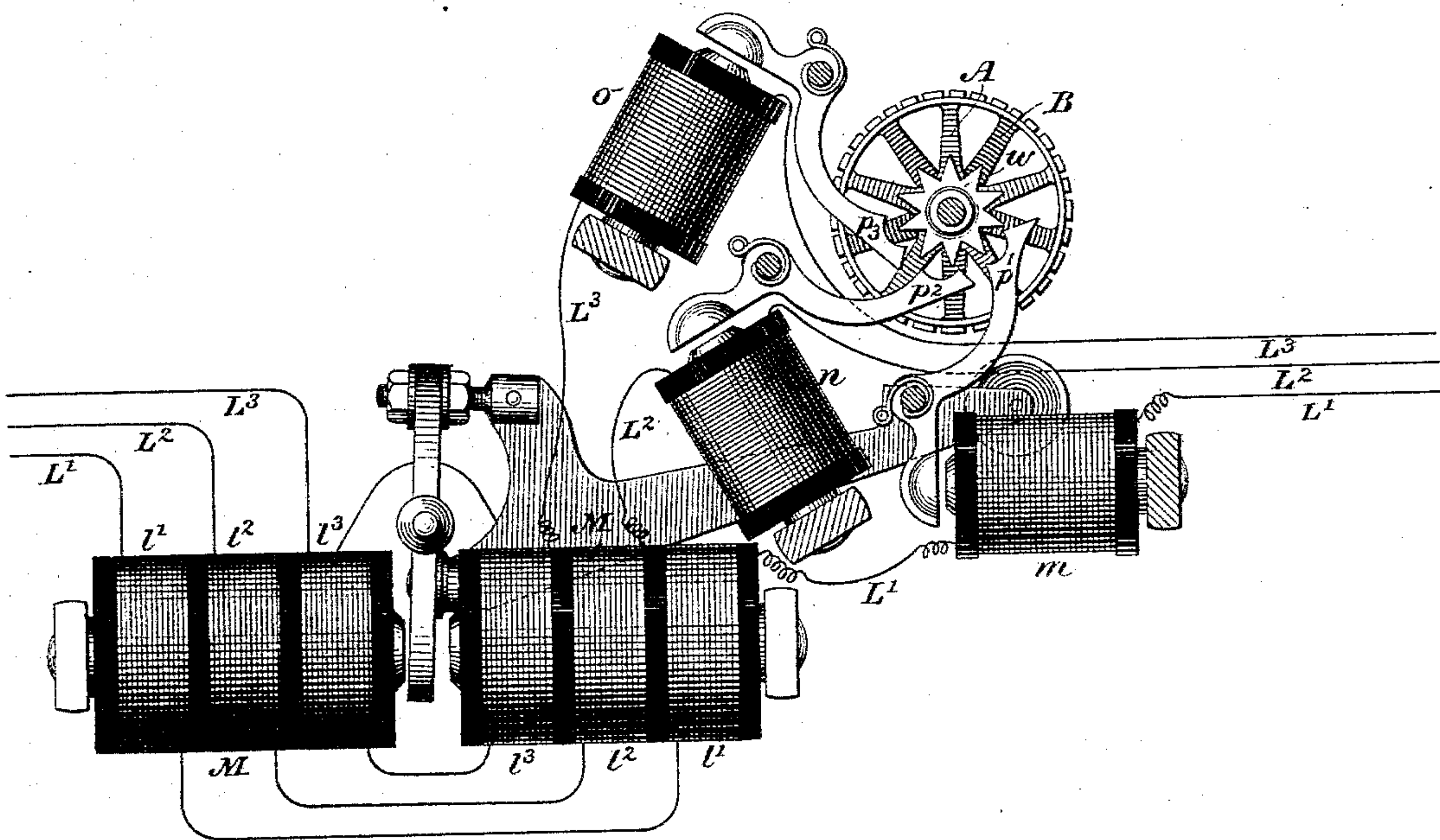
(No Model.)

G. M. PHELPS.

MEANS FOR ROTATING THE TYPE WHEEL OF PRINTING TELEGRAPHS.

No. 304,025.

Patented Aug. 26, 1884.



WITNESSES

*Wm A. Skinkle*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

GEORGE M. PHELPS, OF BROOKLYN, ASSIGNOR TO THE WESTERN UNION  
TELEGRAPH COMPANY, OF NEW YORK, N. Y.

MEANS FOR ROTATING THE TYPE-WHEELS OF PRINTING-TELEGRAPHS.

SPECIFICATION forming part of Letters Patent No. 304,025, dated August 26, 1884.

Application filed November 10, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE M. PHELPS, a citizen of the United States, residing in the city of Brooklyn, county of Kings, and State of New York, have made certain new and useful Improvements in Printing-Telegraphs, of which the following is a description.

The object of my invention is to provide novel means for rotating the type-wheel shaft and for stopping it in position to print any desired character from the type-wheel.

Printing-telegraph instruments used for reporting market quotations and general news items are in common use and of various forms of construction. A feature common to nearly all consists of one or more type-wheels firmly fixed to a shaft, which is rotated step by step, each step presenting a change of character to the impression mechanism. My present invention embraces this feature, and for the purpose indicated I employ a star-wheel fixed to the type-wheel shaft, in combination with a series of propelling-pawls. Each pawl is operated by a separate electro-magnet in a separate main line. Pulsations of electricity are sent over each line of the series in regular succession. Each magnet is thus energized in succession, and each pawl in succession is caused to operate upon a tooth of the star-wheel presented to it, moving it a certain and determinate part of a complete rotation. The number of equidistant teeth of the star-wheel is represented by the quotient of the number of characters upon the type-wheel divided by the number of propelling-pawls. In the accompanying drawing I have shown three propelling-pawls operated by three electro-magnets in three separate line-wires. As there are thirty characters upon the type-wheel, the star-wheel has ten teeth. Ten impulses are sent through each of the three magnets to produce a complete revolution of the type-wheel. The propelling-pawls are so placed with respect to the teeth of the star-wheel that the operation of, say, the first pawl will move the wheel one-thirtieth of a rotation, leaving a tooth of the star-wheel in such position with respect to the second pawl that its operation will move the star-wheel a further distance of one-thirtieth of a rotation, and leave a tooth

of the star-wheel in position to then receive a like movement from the third pawl. The operation of the third pawl produces the same result and leaves a tooth in position to be operated upon by the first pawl, and so on. An impression-magnet having three coil-sections, respectively forming parts of the three main lines, is employed. This magnet is polarized, and may be of any well-known construction. The taking of an impression from the type-wheel is effected by prolonging the pulsation upon one of the three main lines over which a current was last transmitted, and by simultaneously reversing the polarity of such impulse. This causes the pawl last used to lock and retain the type-wheel in a fixed position and to operate the impression device.

Referring to the accompanying drawing, two type-wheels, A and B, are firmly fixed to the shaft, as is the star-wheel *w*. Three electro-magnets, *m n o*, are located, respectively, in three main-line wires, *L' L<sup>2</sup> L<sup>3</sup>*, and these magnets respectively operate three propelling-pawls, *p' p'' p'''*. There are thirty characters, including spaces, on either type-wheel, and the number of teeth of the star-wheel is represented by the quotient of the number of characters on a wheel divided by the number of propelling-pawls, or thirty divided by three. The polar electro-magnet M has three coil-divisions, which form parts, respectively, of the main lines *l' l'' l'''*.

The operation is as follows: Suppose an impulse of electricity to be first sent through line *L'* and magnet *m*. Pawl *p'* is operated, and impinging upon the tooth of the star-wheel immediately before it moves that wheel, and with it the shaft and type-wheels, one step. This movement is sufficient to present a tooth of the star-wheel immediately before pawl *p''*. Following in rapid succession the impulse over *L'*, an impulse is sent over *L<sup>2</sup>*, whereby magnet *n* is energized and pawl *p''* operated. These steps are successively repeated in the operation of rotation until the desired character is rotated into position to take the impression. The impulse of electricity which effects the last step of rotation is prolonged, thus retaining the pawl in engagement with the star-wheel, by which means the type-wheel is firm-



ly held. The polarity of the impulse thus prolonged is then reversed and printing effected.

Means for feeding the paper and for taking an impression from either wheel at pleasure need  
5 not here be described, as they are well known to the art.

I do not confine myself to the use of the particular number of lines and propelling-pawls herein shown and described, as their number  
10 may be varied by making the product of the teeth of the star-wheel and the propelling-pawls equal to the number of characters upon each type-wheel.

What I claim, and desire to secure by Letters  
15 Patent, is—

1. The combination of a type-wheel and shaft, a ratchet-wheel on said shaft, three independent driving-pawls, and three main lines  
20 over which electrical impulses are successively transmitted, each including an electro-magnet for operating said driving-pawls to effect a step-by-step rotation of the type-wheel, substantially as specified.

2. The combination of two or more main lines over which electrical impulses are successively transmitted, an independent electro-magnet for each main line, and an independent driving-pawl controlled thereby, and a star-wheel and type-wheel, substantially as specified, the whole being so arranged that said  
30 type-wheel may be rotated a step at a time by each main-line electro-magnet and pawl in regular succession.

3. The combination of two or more main lines, two or more electro-magnets and driving-pawls, and a ratchet-wheel, substantially  
35 as described, whereby said ratchet-wheel may be rotated a step at a time by each main-line apparatus in regular succession.

G. M. PHELPS.

Witnesses:

WM. B. VANSIZE,  
WM. ARNOUX.